IN THE CLAIMS:

1. **(Withdrawn).**

2. **(Currently Amended)** A receiver responsive to an n_o plurality of entry points comprising:

a feedforward filter structure having an $n_o \times n_i$ plurality of FIR filters, each responsive to a signal that is derived from one of said n_o entry points and each developing an output signal that contributes to one of n_i feedforward filter structure outputs;

a feedback filter structure developing n_i feedback signals, the structure having an $n_i \times n_i$ plurality of FIR filters, each being responsive to one of n_i output signals;

a subtractor structure that develops n_i signals from signals of said n_i feedforward filter structure outputs and said n_i feedback signals;

decision logic responsive to said n_i outputs developed by said subtractor structure, for developing said n_i output signals; and

~~The receiver of claim 1 further comprising~~ a sampling circuit interposed between said n_o plurality of entry points and said feedforward filter structure that samples received signal at rate $T_s = \frac{T}{l}$, where l is an integer and T is symbol rate of a transmitter whose signals said receiver receives.

3. **(Original)** The receiver of claim 2 where $l>1$.

4. **(Withdrawn).**

5. **(Withdrawn).**

6. **(Withdrawn).**

7. **(Withdrawn).**

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8. **(Currently Amended)** A receiver responsive to an n_o plurality of entry points comprising:

a feedforward filter structure having an $n_o \times n_i$ plurality of FIR filters, each responsive to a signal that is derived from one of said n_o entry points and each developing an output signal that contributes to one of n_i feedforward filter structure outputs;

a feedback filter structure developing n_i feedback signals, the structure having an $n_i \times n_i$ plurality of FIR filters, each being responsive to one of n_i output signals;

a subtractor structure that develops n_i signals from signals of said n_i feedforward filter structure outputs and said n_i feedback signals;

decision logic responsive to said n_i outputs developed by said subtractor structure, for developing said n_i output signals; and

a processor coupled to signals applied to said feedforward filter structure, for computing coefficients of said FIR filters included in said feedforward filter structure and of said FIR filters included in said feedback filter structure;

~~The receiver of claim 4~~ where said coefficients are computed once every time interval that is related to rapidity of change in characteristics of transmission medium preceding said entry points.

9. **(Original)** The receiver of claim 8 where said processor installs computed coefficients of said FIR filters in said FIR filters following each computation.

10. **(Withdrawn).**

11. **(Withdrawn).**

12. **(Withdrawn).**

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13. **(Original)** The receiver of claim 2 where said plurality of FIR filters in said feedforward structure is expressed by matrix $\mathbb{W}$, and $\mathbb{W}$ is computed by $\mathbb{W}_{opt}^* = \tilde{\mathbb{B}}_{opt}^* \mathbb{R}_{xy} \mathbb{R}_{yy}^{-1}$, $\mathbb{W}_{opt}^* = \tilde{\mathbb{B}}_{opt}^* \mathbb{R}_{xx} \mathbb{H}^* (\mathbb{H} \mathbb{R}_{xx} \mathbb{H}^* + \mathbb{R}_{nn})^{-1}$, or

$\mathbb{W}_{opt}^* = \tilde{\mathbb{B}}_{opt}^* (\mathbb{R}_{xx}^{-1} + \mathbb{H}^* \mathbb{R}_{nn}^{-1} H)^{-1} \mathbb{H}^* \mathbb{R}_{nn}^{-1}$, where $\mathbb{R}_{xx}$ is an autocorrelation matrix of a block of signals transmitted by a plurality of transmitting antennas to said n_o antennas via a channel having a transfer characteristic $\mathbb{H}$, $\mathbb{R}_{nn}$ is an autocorrelation matrix of noise received by said plurality of n_o antennas during said block of signals transmitted by said transmitting antennas, $\mathbb{R}_{xy} = \mathbb{R}_{xx} \mathbb{H}^*$,

$\mathbb{R}_{yy} = \mathbb{H} \mathbb{R}_{xx} \mathbb{H}^* + \mathbb{R}_{nn}$, and

$\tilde{\mathbb{B}}_{opt}^*$ is a sub-matrix of matrix $\mathbb{B}_{opt}^*$, where $\mathbb{B}_{opt} = \operatorname{argmin}_B \, trace(\mathbb{R}_{ee})$ subject to a selected constraint, $\mathbb{R}_{ee}$ being the error autocorrelation function.

14. **(Original)** The receiver of claim 13 where said plurality of FIR filters in said feedback structure is expressed by matrix $\left[\mathbb{I}_{n_i} \quad \mathbb{0}_{n_i \times n_i N_b} \right] - \mathbb{B}^*$.

15. **(Currently Amended)** <u>A receiver responsive to an n_o plurality of entry points comprising:</u>

<u>a feedforward filter structure having an $n_o \times n_i$ plurality of FIR filters, each responsive to a signal that is derived from one of said n_o entry points and each developing an output signal that contributes to one of n_i feedforward filter structure outputs;</u>

<u>a feedback filter structure developing n_i feedback signals, the structure having an $n_i \times n_i$ plurality of FIR filters, each being responsive to one of n_i output signals;</u>

<u>a subtractor structure that develops n_i signals from signals of said n_i feedforward filter structure outputs and said n_i feedback signals; and</u>

<u>decision logic responsive to said n_i outputs developed by said subtractor structure, for developing said n_i output signals;</u>

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~~The receiver of claim 1~~ where coefficients of the FIR filters in said feedforward filter are set to results in an effective transmission channel **B** with memory N_b, where $N_b \le \nu$, where **B** is optimized so that $\mathbf{B}_{opt} = \arg\min_B trace(\mathbf{R}_{ee})$ subject to a selected constraint; $\mathbf{R}_{ee}$ being the error autocorrelation function, the feedback filter is modeled by $\begin{bmatrix}\mathbf{I}_{n_i} & \mathbf{0}_{n_i \times n_i N_b}\end{bmatrix} - \mathbf{B}^*$, where n_i is the number of outputs in the feedforward filter, as well as the number of outputs in the feedback filter, and the feedforward filter is modeled by **W**, where $\mathbf{W}^*_{opt} = \tilde{\mathbf{B}}^*_{opt}\mathbf{R}_{xy}\mathbf{R}^{-1}_{yy}$, $\mathbf{R}_{xy}$ is the cross correlation between transmitted signals and signals received by said receiver, and $\mathbf{R}_{yy}$ is the autocorrelation of the received signals.

16. (Original) The receiver of claim **15** where said selected constraint is

$$\tilde{\mathbf{B}}^*\mathbf{\Phi} = \mathbf{C}^*, \text{ where } \mathbf{\Phi} \equiv \begin{bmatrix} \mathbf{I}_{n_i} & \mathbf{0} & \cdots & \mathbf{0} \\ \mathbf{0} & \mathbf{I}_{n_i} & \vdots & \vdots \\ \vdots & \mathbf{0} & \ddots & \mathbf{I}_{n_i} \\ \mathbf{0} & \cdots & \cdots & \mathbf{0} \end{bmatrix} \text{ and } \mathbf{C}^* = \begin{bmatrix}\mathbf{0}_{n_i \times n_i \Delta} & \mathbf{I}_{n_i}\end{bmatrix}.$$

17. (Original) The receiver of claim **15** where said selected constraint is

$$\tilde{\mathbf{B}}^*\mathbf{\Phi} = \mathbf{C}^*, \text{ where } \mathbf{\Phi} \equiv \begin{bmatrix} \mathbf{I}_{n_i} & \mathbf{0} & \cdots & \mathbf{0} \\ \mathbf{0} & \mathbf{I}_{n_i} & \vdots & \vdots \\ \vdots & \mathbf{0} & \ddots & \mathbf{I}_{n_i} \\ \mathbf{0} & \cdots & \cdots & \mathbf{0} \end{bmatrix} \text{ and } \mathbf{C}^* = \begin{bmatrix}\mathbf{0}_{n_i \times n_i \Delta} & \mathbf{B}^*_0\end{bmatrix}, \ \mathbf{B}^*_0 \text{ being a monic}$$

lower-triangular matrix whose entries are optimized to minimize $trace(\mathbf{R}_{ee,min})$

18. (Original) The receiver of claim **15** where said selected constraint is $\mathbf{e}_i^*\mathbf{B}_0\mathbf{e}_i = 1$, where $\mathbf{e}_i$ is a vector with value 1 in position i and values 0 elsewhere, and where $\mathbf{B}^*_0$ being a monic lower-triangular matrix whose entries are optimized to minimize $trace(\mathbf{R}_{ee,min})$.

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19. (Original) The receiver of claim **13** wherein said plurality of FIR filters in said feedback filter structure and in said feedforward filter structure are subjected to designer constraints relative to any one or a number of members of the following set: transmission channel memory, size of said block, effective memory of the combination consisting of said transmission channel; n_i, n_o, autocorrelation matrix $\mathbf{R}_{xx}$, autocorrelation matrix $\mathbf{R}_{nn}$, value of factor l in said sampling circuit, and decision delay.

20. (Currently Amended) The receiver of claim **13** where said matrix **W** is expressible by $\mathbf{W} \equiv \left[\mathbf{W}_0 \quad \mathbf{W}_1 \quad \cdots \quad \mathbf{W}_{N_f-1}\right]^t$, where matrix $\mathbf{W}_q$ is a matrix that specifies qth tap coefficients of said FIR filters.

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